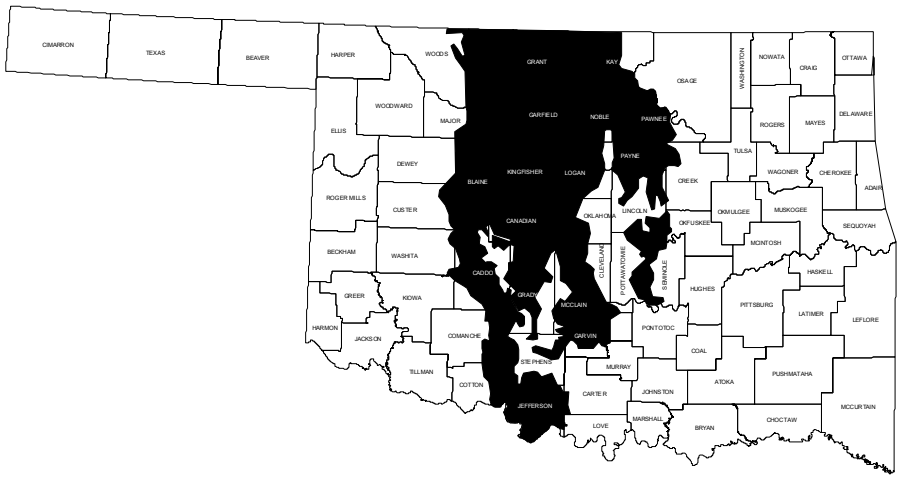
UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

ECOLOGICAL SITE DESCRIPTION



ECOLOGICAL SITE CHARACTERISTICS

Site Type: Rangeland

Site Name: Slickspot

Site ID: R080AY091OK

Precipitation or Climate Zone: Annual Precipitation 29 – 35 inches

Oklahoma Counties:

Blaine, Caddo, Canadian, Cleveland, Comanche, Cotton, Creek, Garfield, Grady, Grant, Jefferson, Kay, Kingfisher, Logan, McClain, Noble, Oklahoma, Osage, Pawnee, Payne, Stephens

Original Site Description Approval:

Date: 1/6/61
Authors: Fred Whittington and Phillip Hager
Notes: Site approval date 6/6/62

Revisions:

Date: 9/1/2003
Authors: John O. Pewthers, SCS (Retired)

Technical Editors: Mark Moseley, State Range Conservationist, NRCS
Harry Fritzler, Range Conservationist, NRCS,
Dr. Jack Eckroat, Grazing Lands Specialist, NRCS

Physiographic Features:

Narrative: Nearly level to moderately sloping

Land Form: (1) Nearly level to moderately sloping

	Minimum	Maximum
Elevation (feet):	800	1400
Slope (percent):	<1	3
Water Table Depth (inches):	0	>72
Flooding:		
Frequency:	Occasional	Occasional
Duration:	Brief	Brief
Ponding:		
Depth (inches):	0	12
Frequency:	Occasional	Freq
Duration:	Long	Long
Runoff Class:	Negligible	Moderate
Aspect:	N/A	N/A

Climatic Features:

Narrative: This site extends across the state from north to south within a minimum and maximum precipitation range of 31 to 34 inches. Most of the rainfall occurs during the spring and fall, with 25 percent in May and June and 15 to 20 percent in September and October. Precipitation is normally erratic during July and August. The rainfall pattern is conducive to the proliferation of warm season grasses.

	Minimum	Maximum
Frost-free period (days):	222	253
Freeze-free period (days):	242	286
Mean annual precipitation (inches):	30.73	33.96

Monthly precipitation (inches) and temperature (^{0}F)

Month	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sep	Oct	Nov	Dec
Precip. Min.	0.36	0.39	1.19	1.41	2.52	1.90	0.75	0.97	1.49	0.80	0.76	0.44
Precip. Max	1.78	2.50	3.85	4.33	7.48	5.86	4.06	3.85	4.37	4.85	2.70	2.24
Temp. Min.	22.2	27.1	35.8	44.9	55.5	65.5	70.3	69.0	61.0	48.1	35.0	25.5
Temp. Max.	53.8	60.1	68.7	76.4	83.9	91.6	97.0	96.0	88.3	78.4	64.9	56.2

Climate Stations:

Station ID	Location	From	To
(1) OK1724	Cherokee, OK	1971	2000
(2) OK2818	El Reno, OK	1971	2000
(3) OK9395	Waurika, OK	1971	2000

Influencing Water Features: None

Wetland Description:
(Cowardin System)

	System	Subsystem	Class
	None		

Stream Types: None
(Rosgen System)

Representative Soil Features

Narrative: Soils of this site occur in complexes. These sites are depressed areas that are usually light colored on the surface. Normally, the surface soil is 2 to 4 inches thick over compact clay. Infiltration is very slow and soil aeration is unfavorable for plant growth. Crusting restricts vegetative yields.

Parent Materials:
Kind: Clayey alluvium
Origin: Weathered from sandstone and shale

Surface Texture:	(1) Loam (2) Silty clay loam (3) Fine sandy loam
Surface Texture Modifier:	(1)
Subsurface Texture Group:	Clay
Surface Fragments < = 3“ (% cover):	None
Surface Fragments >3“ (% cover):	None
Subsurface Fragments < = 3“ (% Volume):	None
Subsurface Fragments > 3” (% Volume):	None
Drainage Class:	Moderately well
Permeability Class:	Impermeable to slow

	Minimum	Maximum
Depth (inches):	0	96
Electrical Conductivity (mmhos/cm):	0.00	16.00
Sodium Adsorption Ratio:	5.00	100.00
Calcium Carbonate Equivalent (percent):		
Soil Reaction (1:1 Water):	5.6	9.0
Soil Reaction (0.1M CaC12):		
Available Water Capacity (inches):	3	6

Representative Soils: Buttermilk (formerly Port Saline), Drummond, Wing

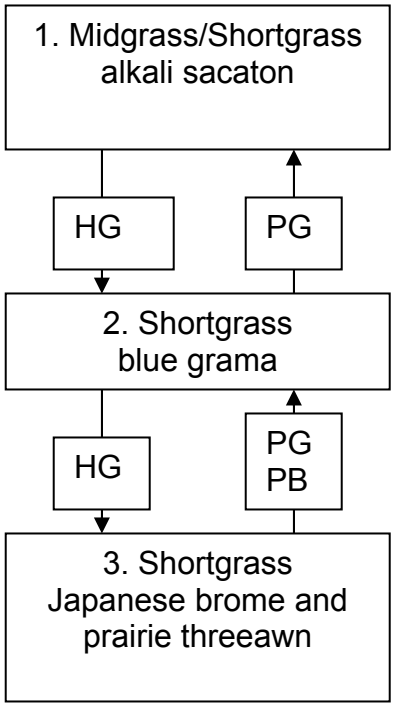
Plant Communities:

Ecological Dynamics of the Site:

Narrative: Vegetation on this site can vary due to differences in salt content and to the degree of compaction of the clay loam subsoil. Vegetation is primarily alkali sacaton, blue grama and buffalograss along with the various combinations of sideoats grama, windmillgrass, silver bluestem, tumblegrass, fall witchgrass, gummy lovegrass, and Texas grama. During extremely cool, wet spring years, Japanese brome, prairie threeawn and western ragweed increase to more than normal levels. Some Slickspots are so salty and droughty that vegetation will not grow. Conversely, other sites can support several different plant communities.

The significant plant communities are:
1. Midgrass/Shortgrass – alkali sacaton
2. Shortgrass – blue grama
3. Shortgrass – prairie threeawn and Japanese brome

State and Transition Diagram



Legend:
HG – Heavy Grazing; **PG** – Prescribed Grazing; **PB** – Prescribed Burning

Reference Plant Community: Slkickspot, Midgrass/Shortgrass, Alkali sacaton Presumed Historic Plant Community (HPC)

Photo Plant Community Slickspot 1

Narrative: The presumed Historic Plant Community (HPC) is open Midgrass and Shortgrass prairie with alkali sacaton being the predominant graminoid and approximately 10% sideoats grama on site. The major shortgrasses are blue grama and buffalograss. This site also supports a variety of other grasses and forbs including sedges, common yarrow, windmillgrass, Scribner's panicum, Texas grama, mourning lovegrass, silver bluestem, whorled dropseed, inland saltgrass, gummy lovegrass, fall witchgrass, meadow dropseed, heath aster, tumblegrass, and fringeleaf paspalum. Prairie threeawn, Japanese brome and western ragweed are common invaders. There can also be a scattering of honey mesquite on this site. The Slickspot HPC evolved via the influence of extremes in temperature, precipitation, wind, drought, fire and herbivory, especially buffalo grazing.

Slickspots intermingle with Claypan and Loamy Prairie ecological sites. It is difficult to separate these intermingled ecological sites into individual management units. Continous overgrazing decreases alkali sacaton, sideoats grama and blue grama and increases buffalograss, gummy lovegrass, mourning lovegrass, whorled dropseed, inland saltgrass, tumblegrass, windmillgrass, and Texas grama. With continued overgrazing regimes, these presumed HPC plants will eventually be replaced with Japanese brome, prairie threeawn and other annuals. The rate at which this replacement occurs is dependant upon stocking rate, timing of grazing, and available moisture.

Range management plans should include proper stocking rates and prescribed burning to restore, maintain, or manipulate the plant community. Short-term, heavy early grazing on prairie threeawn and Japanese brome, to prevent them from producing seed, will enhance the restoration and maintenance of the presumed historic site plant community. Prescribed burning on heavy infestations of prairie threeawn and Japanese brome will also aid in their control.

Annual Production by Plant Type: Air Dry Weight in pounds per acre.

Plant Type	Low	Avg.	High
Grasses / Grasslike	950	2565	3610
Forb	40	108	152
Shrub	10	27	38
Total	1000	2700	3800

Plant Species Composition:
Grasses and Grasslike (2565 air dry lbs/acre)

Group	Common Name	Scientific Name	Species Annual Production	Group Annual Production
1	alkali sacaton	*Sporobolus airoides*	810	
1	blue grama	*Bouteloua gracilis*	270	1350
1	sideoats grama	*Bouteloua curtipendula*	270	
1	meadow dropseed	*Sporobolus asper*		
2	buffalograss	*Buchloe dactyloides*	135	
2	tumble windmillgrass	*Chloris verticillata*	135	
2	gummy lovegrass	*Eragrostis curtipedicellata*	135	
2	fall witchgrass	*Panicum capillare*	135	
2	tumblegrass	*Schedonnardus paniculatus*	135	918
2	fringeleaf paspalum	*Paspalum laeve*	135	
2	inland saltgrass	*Distichlis spicata*	27	
2	whorled dropseed	*Sporobolus pyramidatus*	27	
2	mourning lovegrass	*Eragrostis lugens*	27	
2	Texas grama	*Bouteloua rigidiseta*	27	
3	Scribner's panicum	*Dicanthelium oligosanthes*	27	
3	prairie threeawn	*Aristida oligantha*	108	
3	silver bluestem	*Bothriochloa laguroides*	27	297
3	purple threeawn	*Aristida purpurea*	27	
3	Sedge sp.	*Carex sp.*	108	

Forbs (108 air dry lbs. / acre)

Group	Common Name	Scientific Name	Species Annual Production	Group Annual Production
4	western ragweed	*Ambrosia psilostachya*		
4	Texas croton	*Croton texensis*		
4	yellowspine thistle	*Cirsium ochrocentrum*		108
4	dotted gayfeather	*Liatris punctata*		
4	heath aster	*Symphyotrichum ericoides*		
4	common yarrow	*Achillea millefolium*		

Shrubs (27 air dry lbs. / acre)

Group	Common Name	Scientific Name	Species Annual Production	Group Annual Production
5	Pricklypear	*Opuntia P.*		27

Structure and Cover:

Soil Surface Cover

Basal Cover				Non-Vascular Plants	Biological Crust	Litter	Surface Fragments >1/4 & <= 3"	Surface Fragments > 3"	Bedrock	Water	Bare Ground
Grass/ Grasslike	Forb	Shrub/ Vine	Tree								
24%	<2%	<2%	None	None	None	<10%	None	None	None	None	>30%

Ground Cover

Vegetative Cover						Non-Vegetative Cover					
Grass/ Grasslike	Forb	Shrub/ Vine	Tree	Non-Vascular Plants	Biological Crust	Litter	Surface Fragments >1/4 & <= 3"	Surface Fragments > 3"	Bedrock	Water	Bare Ground

Structure of Canopy Cover

	Grass/Grasslike	Forb	Shrub/Vine	Tree
<= 0.5 feet				
>0.5 - <=1 feet				
>1 - <=2 feet				
>2 - <=4.5 feet				
>4.5 - <=13 feet				
>13 - <= 40 feet				
>40 - <=80 feet				
>80 - <= 120 feet				
>120 feet				

Plant Growth Curve:

Growth Curve Number: OK002
Growth Curve Name: Native warm season grasses.
Growth Curve Description: Midgrass and Shortgrass community with normal year growing conditions.

JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
0	1	5	10	20	30	10	5	10	6	2	1

Plant Community Name: Slickspot, Shortgrasses, blue grama. Presumed Historic Plant Community (HPC)

Photo Plant Community: Slickspot 2**,** Shortgrasses, blue grama.

Narrative: This site is predominantly blue grama. Blue grama will comprise 50 to 80% of the total non-woody annual vegetative production. The balance of this sites vegetation is usually small percentages of other perennial grasses such as alkali sacaton, buffalograss, sideoats grama, meadow dropseed and gummy lovegrass. Continuous overgrazing contributes to the predominance of blue grama on this site. Blue grama proliferation will quicken as stocking rates increase. In years of dry summers followed by cool, mild, wet winters, the presence of Japanese brome, prairie threeawn and western ragweed increase.

Range management practices that include the use of proper stocking rates and prescribed burning will help restore, maintain, and manipulate this plant community over time. Restoration of the HPC may take 10 years or more depending upon the degradation of the site.

Plant Community: Slickspot, Shortgrasses with Japanese brome and prairie threeawn

Photo Plant Community: Slickspot 3, disturbed (i.e. Oldfield, cultivation)

Narrative: This site's plant community is predominately prairie threeawn and Japanese brome interspersed with remnants of perennial grasses such as alkali sacaton, blue grama, sideoats grama and buffalograss. This plant community is the result of from long-term overgrazing or a history of cultivation. Scattered honey mesquite and numerous annuals are usually found on this site. Remnant perennial grasses will eventually respond to proper stocking rates, but it may take 15 years or more to do so depending upon seed bank, moisture availability, stocking rate, and other range management practices. In some cases, very few remnant grasses remain. When this occurs, the best management practice may be to reseed the site.

Ecological Site Interpretations:

Animal Community: Slickspots can be as large as 10 acres or more, but this is rare. As a result of their small size, Slickspots provide only a small portion of habitat and food for the animal community. Many animals move through and within their boundaries, but because Slickspots are small inclusions within other larger ecological sites, they do not support any animals, in total, by themselves.

Plant Preferences by Animal Kind:

Animal Kind: Cattle

		Preferences											
Common Name	Plant Part	J	F	M	A	M	J	J	A	S	O	N	D
alkali sacaton	Leaves	U	U	U	D	D	D	D	D	D	U	U	U
blue grama	Leaf - Stem	P	P	P	P	P	P	P	P	P	P	P	P
sideoats grama	Leaf - Stem	D	D	D	P	P	P	P	P	P	P	D	D
meadow dropseed	Leaves	U	U	U	D	D	D	D	D	D	U	U	U
buffalograss	Leaf - Stem	P	P	P	P	P	P	P	P	P	P	P	P
tumble windmillgrass	Leaf - Stem	U	U	U	D	D	D	U	U	U	U	U	U
gummy lovegrass	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
fall witchgrass	Leaves	D	D	D	D	D	D	P	P	P	P	D	D
tumblegrass	Leaves	U	U	U	U	D	D	P	P	P	D	D	D
fringeleaf paspalum	Leaves	U	U	U	P	P	P	P	P	D	D	D	U
inland saltgrass	Leaves	U	U	U	D	D	U	U	U	U	U	U	U
whorled dropseed	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
mourning lovegrass	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
Texas grama	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
Scribner's panicum	Leaves	P	P	P	P	D	U	U	U	D	P	P	P
prairie threeawn	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
silver bluestem	Leaf - Stem	U	U	U	D	D	D	D	D	D	D	D	D
purple threeawn	Leaf - Stem	U	U	U	U	U	U	U	U	U	U	U	U
Sedge sp.	Leaves	P	P	P	P	P	P	P	P	P	P	P	P
western ragweed	Leaves	U	U	U	U	D	D	D	U	U	U	U	U
Texas croton	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
yellowspine thistle	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
dotted gayfeather	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
heath aster	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
common yarrow	Leaves	U	U	U	U	U	U	U	U	U	U	U	U
Pricklypear cactus	Pads	U	U	U	U	U	U	U	U	U	U	U	U
Honey mesquite	Leaves	U	U	U	U	U	U	U	U	U	U	U	U

Legend: P = Preferred D = Desirable U = Undesirable E = Emergency N = Nonconsumed T = Toxic

Hydrology Functions: The Slickspot ecological site gets its name from the fact that it appears to be very dry on the surface, but because it has a compacted clay loam subsoil and permeability class of impermeable to slow, it is usually boggy (slick) just below the surface. Many farmers and ranchers have mistakenly rode, walked, or driven across one of these areas only to become stuck; hence the name, Slickspot.

Recreational Uses: Because of the site's small size, Slickspot recreational uses are usually included with companion (intermingled) sites such as Claypan and Loamy Prairie ecological sites.

Wood Products: None

Other Products: None

Supporting Information

Associated Sites:

Site Name	Site ID
Loamy Prairie	080AY056OK
Claypan Prairie (South)	080AY011OK

Similar Sites:

Site Name	Site ID
Alkali bottomland	080AY001OK

State Correlation: Kansas calls the Oklahoma Slickspot ecological site Saline Lowland. Kansas Saline Lowland sites are all located in south central Kansas.

Inventory Data References

Narrative: Because of their salinity, Slickspots are very variable in production. The vegetative production data and statements contained herein are based on long term observations and eleven years of NRCS [formally the Soil Conservation Service (SCS)] clipping data performed in Jefferson County Oklahoma from 1959 to 1970 by the following SCS personnel: John Pewthers, Chuck Grimes, Dale Stidham, Phillip Hager, Paul Copeland, Curtis Smith, Fred Whittington and Gerald Duke. Long term observations and expert opinion tend to indicate that vegetative production figures in excess of 3800 lbs. per acre may be anomalies. Vegetative production figures contain only production of non-woody species to shoulder height. Mesquite is not included in vegetative production figures.

Inventory Data References:

Data Source	Number of Records	Sample Period	State	County
Clipping Data[1]	15	10/59 – 12/70	OK	Jefferson

[1] SCS Range – 417 clipping record

Type Locality[1]:

State: Oklahoma
County: Jefferson
[1]Located on private property, thus the exact location is sensitive data.

Relationship to Other Established Classifications: None

Other References: None

Reviewer: Dr. Terry Bidwell, Extension Specialist, Rangeland Ecology and Management, Plant and Soil Sciences Department, Oklahoma State University, September, 2003

Site Description Approval:

Mark Moseley,
State Range Conservationist
Stillwater, Oklahoma

Appendix 1.

Ecological Reference Worksheet
Author(s)/participant(s): John O. Pewthers, (Retired NRCS)
Reference site used? No
Date: August 18, 2003
MLRA: 80A Ecological Site: Slickspot (080AY091OK

Indicators:
1. Number and extent of rills: None.
2. Presence of water flow patterns: There are some bunchgrasses that would cause some water flow patterns, but there should not be much evidence of soil movement.
3. Number and height of erosional pedestals or terracettes: Minimal.
4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are *not* bare ground): This site can have 30% bare ground.
5. Number of gullies and erosion associated with gullies: None.
6. Extent of wind scoured, blowouts and/or depositional areas: None.
7. Amount of litter movement (describe size and distance expected to travel): Minimal. Litter could travel 3 – 5 feet following a burn.
8. Soil surface (top few mm) resistance to erosion (stability values are averages – most sites will show a range of values for both plant canopy and interspaces, if different): Soil Stability Kit values should range 5 – 6 due to the organic matter content of the topsoil.
9. Soil surface structure and SOM content (include type and strength of structure, and A-horizon color and thickness for both plant canopy and interspaces, if different): The soil surface is light colored and is usually 2 – 4 inches thick. The structure is weak, very fine granular.
10. Effect of plant community composition (relative proportion of different functional groups) & spatial distribution on infiltration & runoff: Runoff on this site is very high due to the low infiltration capacity of the soil. This soil is subject to crusting with low aeration.
11. Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site): The subsurface is columnar in structure and very hard when dry. This may be confused with compaction but is a natural characteristic.
12. Functional/Structural Groups (list in order of descending dominance by above-ground weight using symbols: >>, >, = to indicate much greater than, greater than, and equal to): Midgrass/Shortgrass > Shortgrass >> forbs >> shrubs. All warm-season plants.
13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence): Very little plant mortality except possibly following extreme drought.
14. Average percent litter cover (60%**) and depth (**<.5 inches**).**
15. Expected annual production (this is TOTAL above-ground production, not just forage production): 1000 - 3800 #/acre
16. Potential invasive (including noxious) species (native and non-native). List species which characterize degraded states and which, after a threshold is crossed, "can, and often do, continue to increase regardless of the management of the site and may eventually dominate the site": Mesquite, annual bromes, western ragweed.
17. Perennial plant reproductive capability: Most plants should reproduce each year.

Rev. 12/15/02